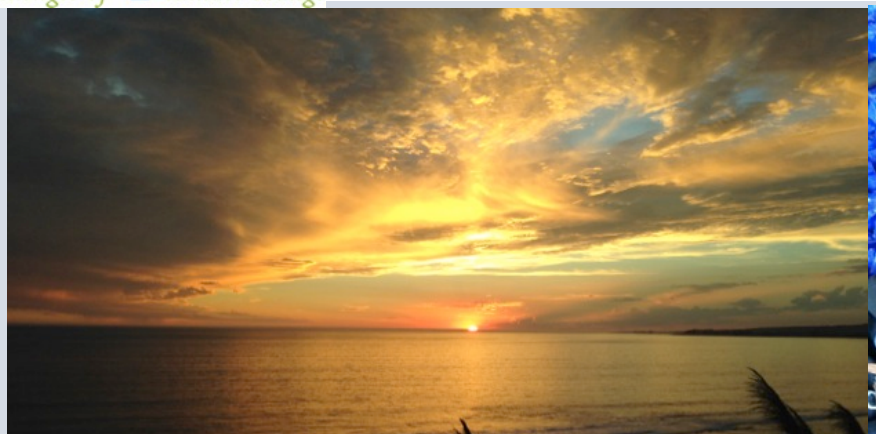


Climate Change Adaptation

What it means for you and your work

EcoAdapt™
Meeting the challenges of climate change

Lara J. Hansen, Ph.D.
Chief Scientist & Executive Director
EcoAdapt



“There is no box.”

-Amory Lovins

Definitions

Mitigation: Reducing the causes of climate change

Adaptation: Responding to, preparing for and when possible reducing, the effects of climate change
(*Buying Time*)

“The future ain’t what it used to be.”

-Yogi Berra

“Don’t Panic.”

-Douglas Adams

Hitchhiker’s Guide to the Galaxy

Vulnerability

Adaptation Options

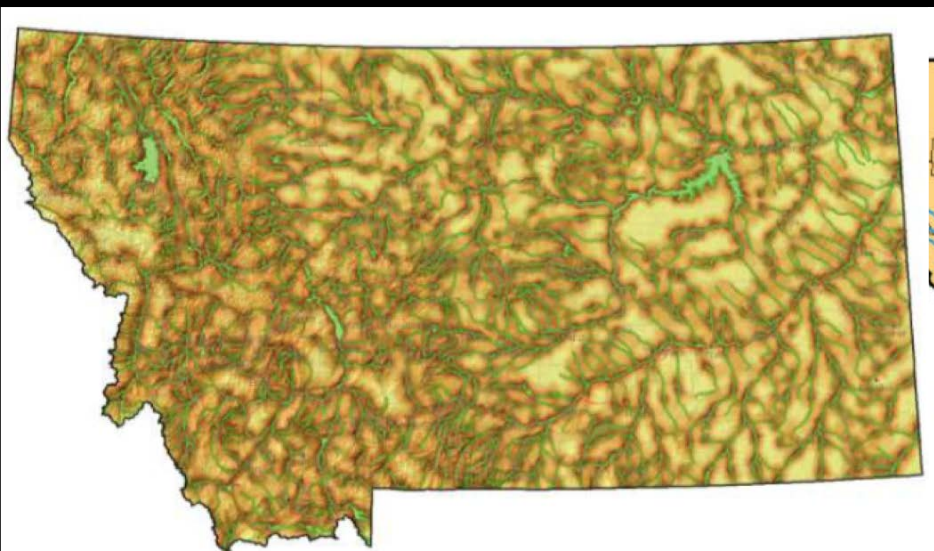
Resistance **Resilience** **Response**

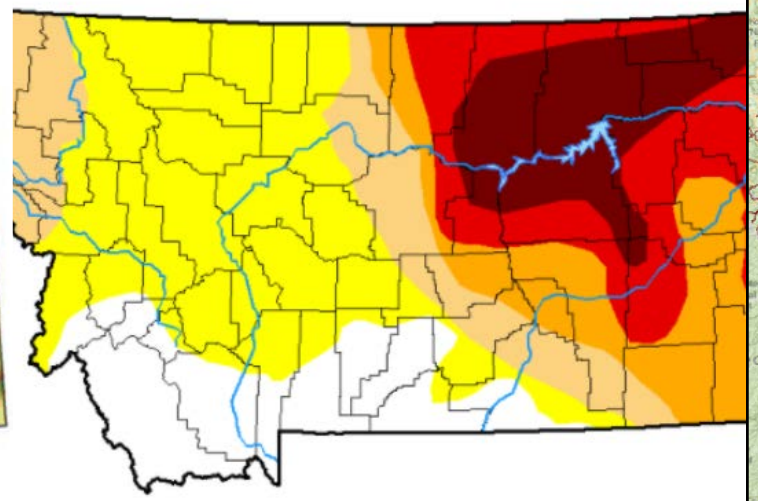
Five tenets of adaptation

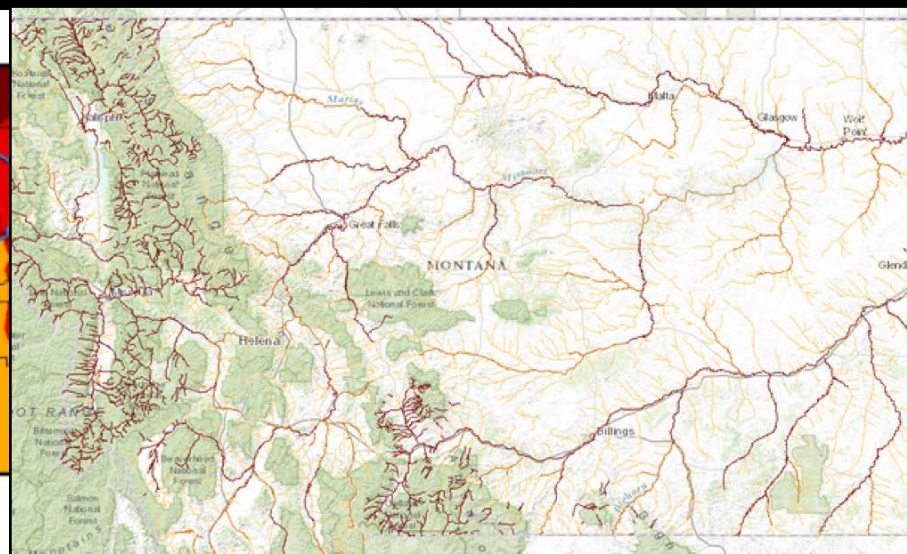
1) Protect adequate and appropriate space for a changing world

Spatial Considerations Require Temporal/Climate Aware Thinking

- Refugia
- Gradients (Latitudinal/Elevational)
- Heterogeneity
- Gene flow/Connectivity
- Inclusion of other changes in larger watershed or landscape







2) Reduce non-climate stresses

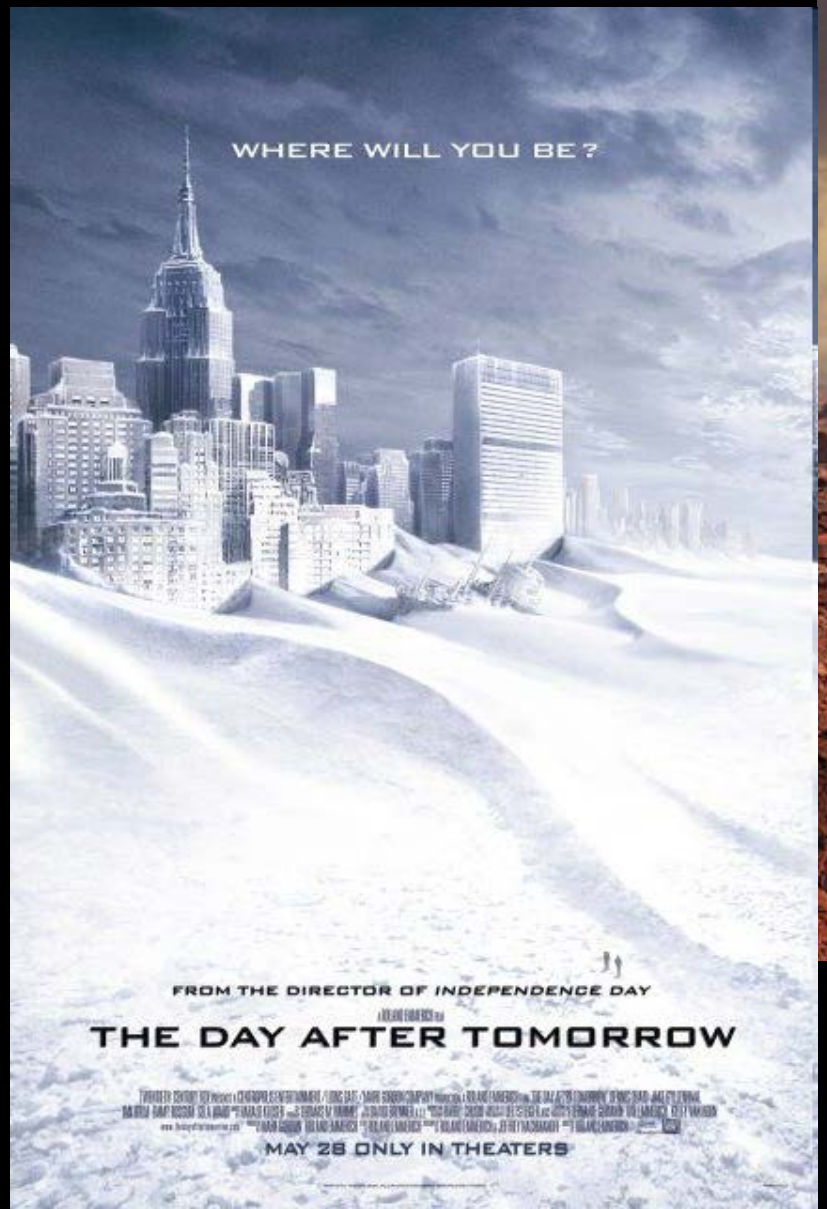
Unsustainable Harvest

Invasive & Pest Species

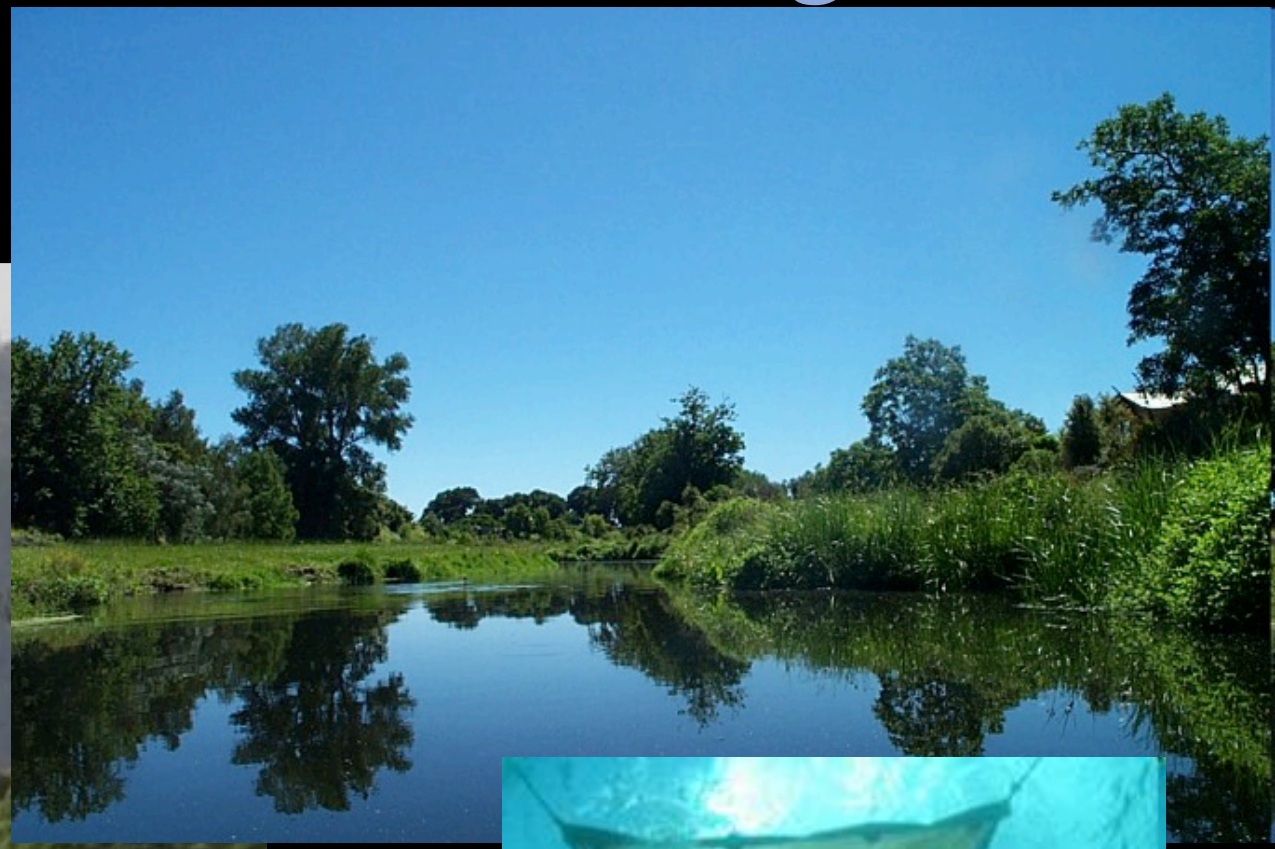
Agriculture & Habitat Fragmentation

Pollution & Habitat Degradation

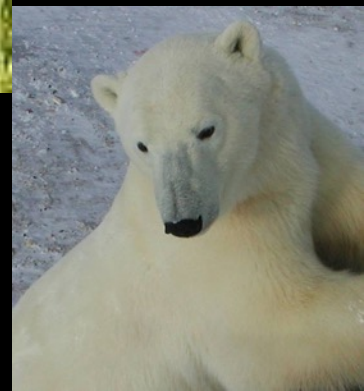
3) Manage for Uncertainty



4) Reduce local and regional climate change



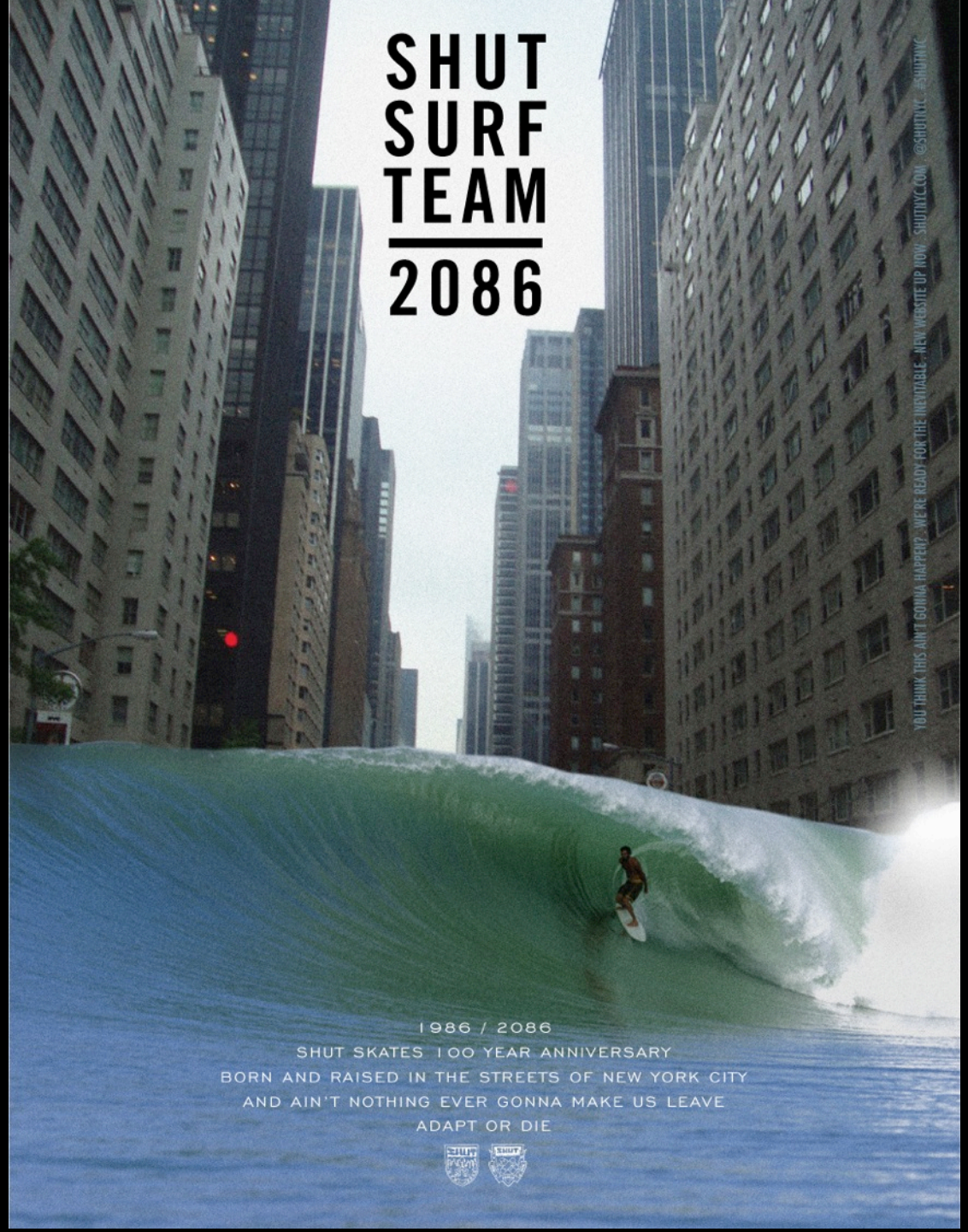
5) Reduce Greenhouse Gas Emissions



Resilience options have limits, some systems are very limited

High elevation habitat, polar landscapes, oceans, drier regions….

Does a skateboard company have a better adaptation plan than your community or agency?



Adaptation Process

Understand implications of climate change for water and water dependent resources

Design water management and water related practices to develop *durable* outcomes

Improve water management and water related practices to achieve *durable* outcomes

Determine the efficacy of water management and water related practices as conditions change

Vulnerability Assessment

Adaptation Strategy Development

Adaptation Strategy Implementation

Monitoring, Evaluation, Modification

Towards Adaptation Action

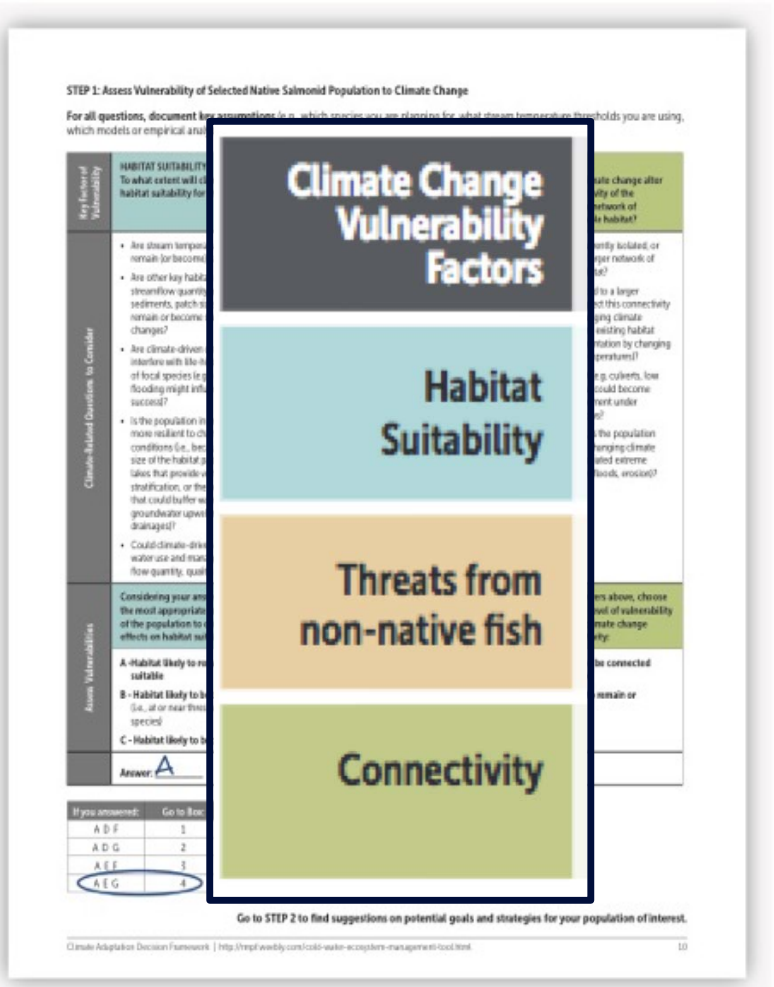
Using information on climate vulnerabilities to select goals and actions from a menu of adaptation options

Funding from:

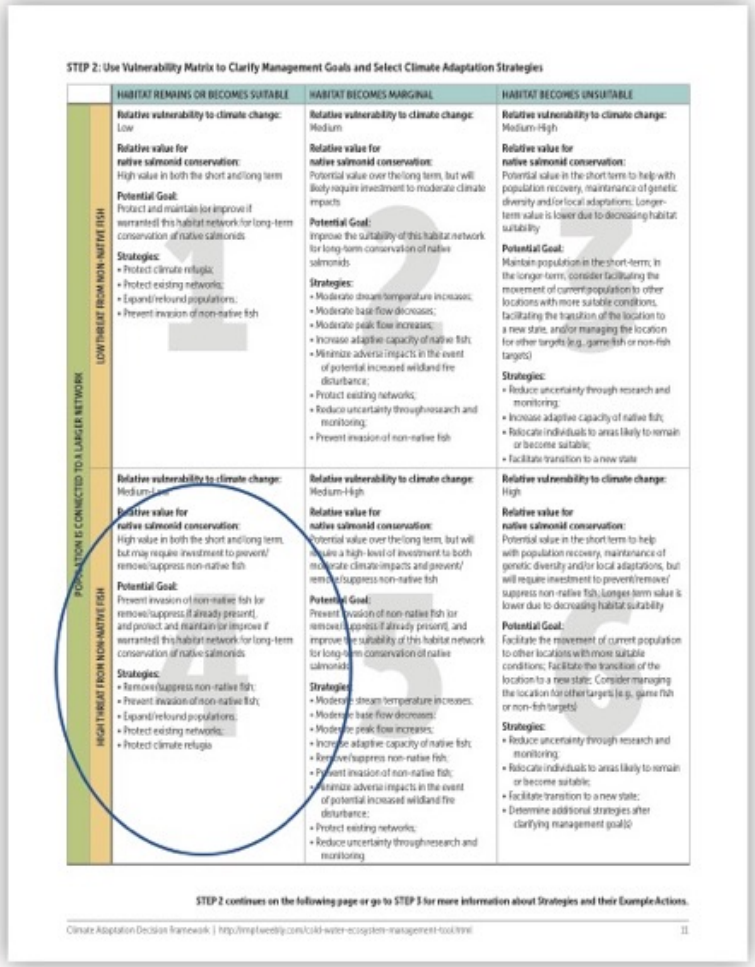
Great Northern
LANDSCAPE CONSERVATION COOPERATIVE

3 Step Decision Support Framework

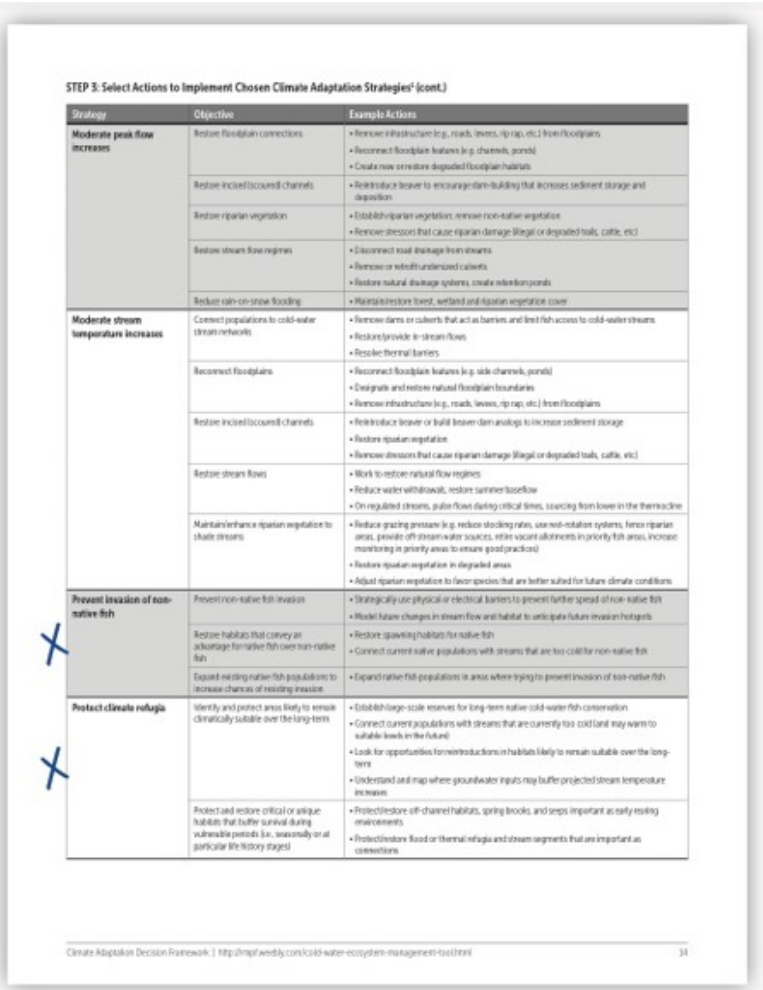
Step 1: Vulnerability



Step 2: Adaptation Strategy

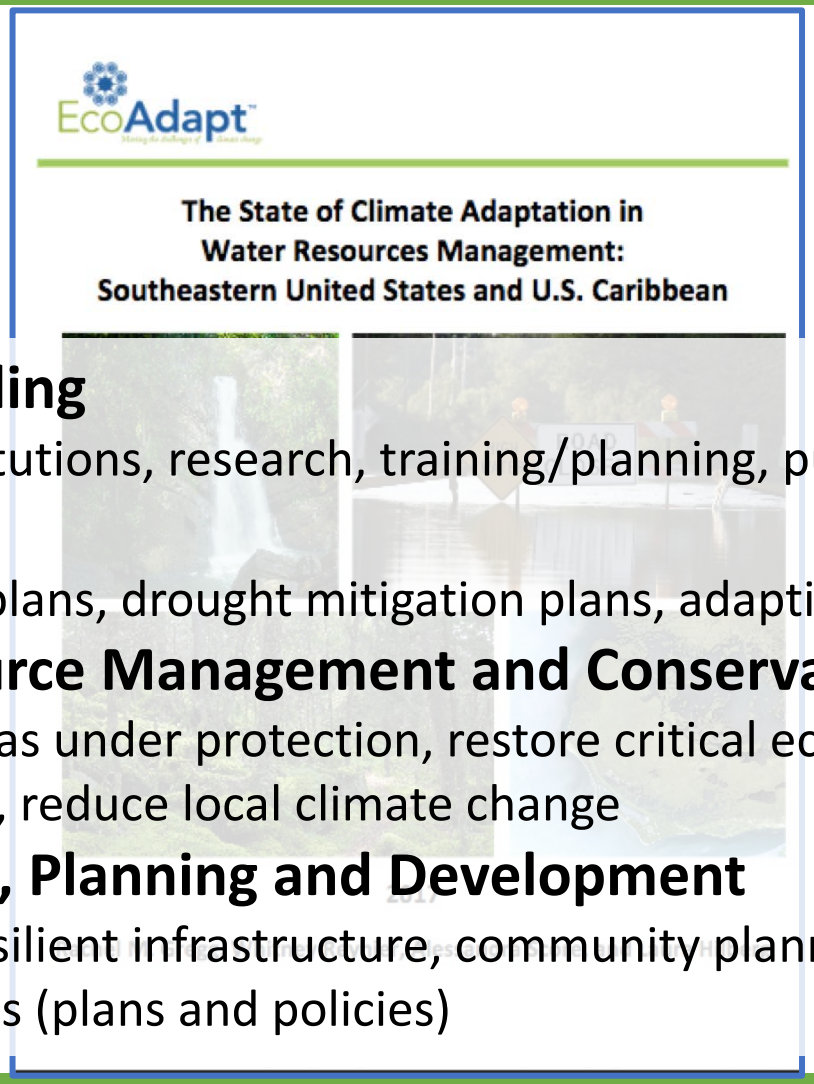


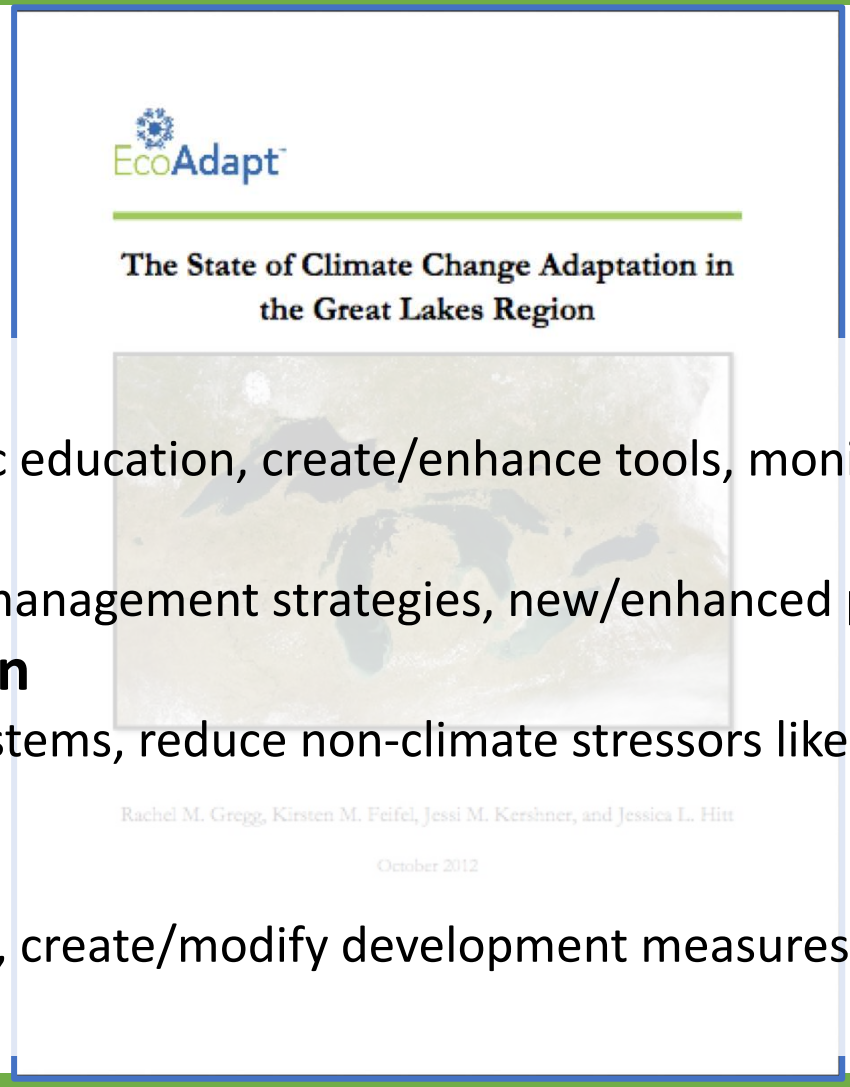
Step 3: Implementation Actions



Available for download: http://rmpf.weebly.com/cold-water-ecosystem-management-tool.html

Adaptation in Practice





Capacity building

Reform institutions, research, training/planning, public education, create/enhance tools, monitoring

Policy

Adaptation plans, drought mitigation plans, adaptive management strategies, new/enhanced policies

Natural Resource Management and Conservation

Enhance areas under protection, restore critical ecosystems, reduce non-climate stressors likely to interact with climate, reduce local climate change

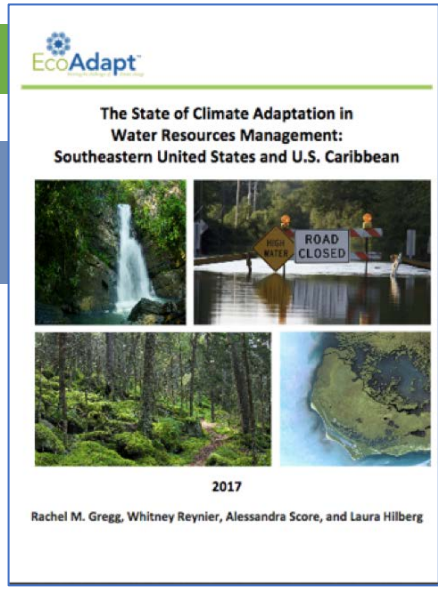
Infrastructure, Planning and Development

Resistant/resilient infrastructure, community planning, create/modify development measures, disaster preparedness (plans and policies)

Preparing water utilities for flood & drought

Waterworks

CORPORATION OF NEWPORT NEWS VIRGINIA 1958



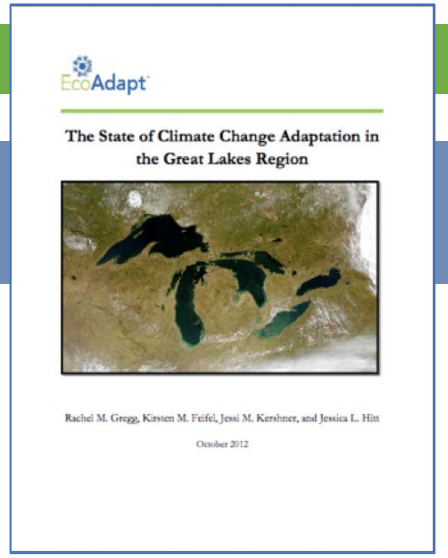
Changing precipitation patterns (flood/drought), subsidence

Actions

- Rebuilding and refurbishing dams to better withstand 100 year storm events
- Increased water conservation programs to reduce consumer overuse
- Watershed health programs to apply land management best practices

State Water Plan: Illinois Sate Water Survey

ILLINOIS STATE WATER SURVEY
PRAIRIE RESEARCH INSTITUTE



Drought, Lack of Management Coordination

Actions

- Evaluate ability of existing water facilities to cope with drought
- Build historic and projected climate data into water supply scenarios for infrastructure design and function
- Increased dialogue and coordination across state water planning activities
- Cumulative impacts of use and management response strategies on water resources

Installing beaver mimicry structures

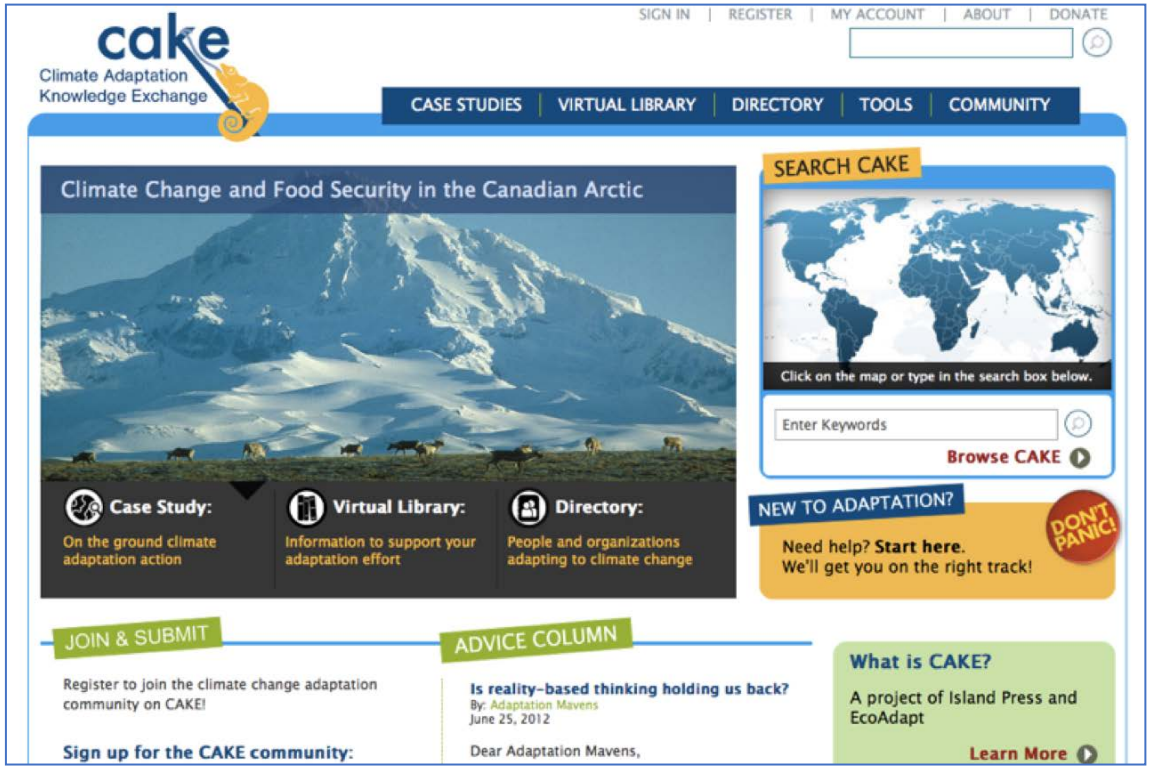
Decreased late summer flows, increased stream temperatures

Actions

- Identify high-flow potential basins resilient to climate change (i.e., temperature and discharge)
- Prioritize high-flow basins for whole-system restoration
- Install beaver mimicry structures as primary restoration approach

Interested in Adaptation? Some resources and opportunities for you!

4th National Adaptation Forum
April 2019 - Madison, WI
NationalAdaptationForum.org



Climate Adaptation Knowledge Exchange
Your online adaptation destination
www.CAKEx.org

Can you identify the elements of adaptation in the vignettes?

1. What is the vulnerability?
   - How is climate change affecting the system?
2. What is the adaptation strategy?
   - Which of the Three Rs (Resistance, Resilience, Response)?
3. How are they addressing it?
   - Which of the Five Tenets?
4. How will they know if it's working?
   - What is being monitored? How could it be modified?